T. A. EDISON.

PHONOGRAPHIC APPARATUS.

APPLICATION FILED NOV. 3, 1909.

1,036,470. Patented Aug. 20, 1912.

Fig. 1

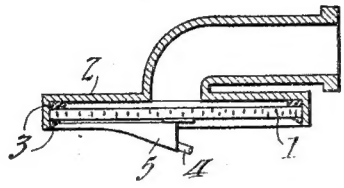
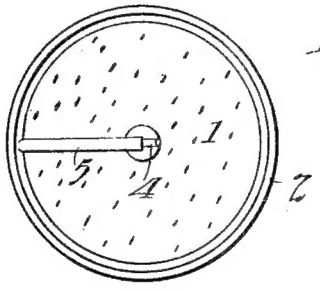


Fig. 2



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UNITED STATES PATENT OFFICE.

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PHONOGRAPHIC APPARATUS.

1,036,470. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed November 3, 1909. Serial No. 526,036.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonographic Apparatus, of which the following is a description.

My invention relates to phonographic apparatus, and the object thereof is to provide a diaphragm adapted to be used in a sound recorder or reproducer, but particularly in the former, and having such qualities as to cause it to vibrate truly in accordance with the sound waves to be recorded or reproduced, when mounted in a suitable sound recorder or reproducer.

My invention also consists in a sound recorder or reproducer having such a diaphragm as an element thereof.

It has heretofore been proposed to manufacture diaphragms from a large number of substances, among which copper and other metals, glass, mica, felt, fiber, paper stock and thin wood may be mentioned. None of these substances possesses all the attributes necessary for the perfect diaphragm. In the case of diaphragms made from substances which do not occur in nature in such a form that they can be directly used for the purpose, as metals, glass, etc., internal and local stresses are bound to occur, so that the thin elastic disk constituting the diaphragm necessarily has an uneven and buckled surface, each minute buckle or portion of different tension vibrating independently when the disk is vibrated as a diaphragm resulting in the produtcion of foreign noises. In the case of mica, the structure is such that the best results can not be obtained. In the case of wood, birch bark, etc., the grain and natural formation of the same render them unable to vibrate in perfect accordance with the sound waves to be recorded or reproduced.

I overcome the difficulties above noted by the use of cork as a diaphragm material. Cork is a substance which is absolutely free from internal stresses or distortions, and which is not striated or foliated, or otherwise rendered uneven in its structure. Preferably, the diaphragm is cut from a section of the bark taken at right angles to the diameter of the tree, so that the small holes or pits which are found in cork, and which extend radially outward when the bark is in position on the tree, will extend transversely of the diaphragm. A cork may be obtained in which these openings are very fine and slight, and this material should be used for the manufacture of diaphragms. If diaphragms are made from cork of poorer quality, in this respect, having a number of holes or air passages extending therethrough, the proper operation of the diaphragm will be interfered with. The diaphragm should be sufficiently thick to have the requisite firmness. I have obtained the best results with a diaphragm having a thickness of at least one-sixteenth of an inch.

Reference is hereby made to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a central vertical section through a phonograph recorder embodying my invention. Fig. 2 is a bottom plan view thereof.

In the drawings, the diaphragm 1 is mounted in the sound box 2 between gaskets 3 or in any other well known manner. The recording stylus 4 is mounted in a holder 5 which is attached to the center of diaphragm 1 in a well known manner.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:

In apparatus of the class described, the combination with a phonographic sound box, of a cork diaphragm mounted therein and firmly secured thereto adjacent its periphery, a stylus, and means for connecting said stylus to said diaphragm, said diaphragm being free from large pits or openings, being cut on a section substantially at right angles to the direction of the pits therein, and having sufficient thickness to be firm and substantially free from air passages therethrough, substantially as described.

This specification signed and witnessed this 1st day of November 1909.

THOS. A. EDISON.

Witnesses:
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